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(54)

COMPOSITE VENTILATION MEMBER FOR CEILING COVERINGS

(70)

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No. OF CLAIMS 10

The invention relates to a composite ventilation member for ceiling coverings, in particular for sound-absorbing ceilings.

There are many known ventilation members to be arranged between neighboring panels attached to supporting means, and plates resting thereon, of sound-absorbing material.

A disadvantage of the known ventilation members, or ventilating systems is that they are comparatively expensive to produce, and their installation is difficult and time consuming.

The object of the invention is to provide a ventilation member  
10 avoiding the above mentioned disadvantages, and in particular permitting subsequent installation of the members.

This object has been accomplished, according to the invention, in that the ventilation member is composed of a top and a bottom component section, with the component sections having horizontal holding flanges to secure tiles or the like of sound-absorbing material, with mutually engageable connection means being arranged on the component sections, the top and the bottom component sections having air passage openings therein.

One advantage of the ventilation member according to the invention is that assembly of the two component sections, between the holding flanges  
20 of which the tiles of sound-absorbing materials are to be arranged, is simple, since the sections have merely to be snapped together. Another advantage consists in that, by virtue of the shape of the sections, they can be extruded, the ventilation openings being machined in the sections in a second operation. Sections of any length can be produced in this way thus almost completely eliminating the usual joints.

According to a refinement of the invention, the connection means are arranged on either side of the air passage openings, and are in the form of mutually engageable lock hooks with beveled surfaces. This configuration of the connection means permits easy assembly of the two sections and  
30 provides secure retention of the assembled parts. The connection means arranged on either side of the air passage openings do not interfere with

the ventilation cross section.

The air passage openings may be in the form of air slits in the top section and air holes in the bottom section. According to another development, a lengthwise displaceable strip with apertures is arranged over the air holes.

With this strip, the flow of air out of the ventilation member can be regulated.

According to another development the ventilation member is distinguished in that two bounding surfaces are arranged at a distance from each other and in lengthwise direction of the section extend vertically downward from the holding flanges of the bottom component section, serving to baffle the stream of air, these vertical bounding surfaces projecting into the gap between neighboring panels.

According to still another embodiment, the ventilation member is distinguished in that hook shaped centering segments extend vertically downward from the holding flanges of the bottom component section, serving to center the ceiling covering panels.

These centering segments are arranged to provide an attractive appearance for a sound-absorbing ceiling by keeping the neighboring panels equidistant from the ventilation member. The centering segments may be in contact with the panels. They do not serve to support the panels.

Upward bends on the holding flanges of the top component section facilitate assembly of boards of sound-absorbing material with the ventilation section, because the holding flange exerts a clamping action on the boards.

On the under side of the bent margins of the flange of the top component section, back hooks may be arranged, to catch in the sheets of sound-absorbing material and thus provide better retention.

Embodiments of the invention by way of example, exhibiting further features of the invention, are represented in the drawing, where:

Fig. 1 shows a pictorial sectional view of the ventilation member installed in a ceiling;

Fig. 2 shows a sectional view clarifying the assembly of the component sections of the ventilation member;

Fig. 3 shows a sectional view of the component sections assembled, with a board of sound-absorbing material inserted;

Fig. 4 shows a top view at the line IV-IV in Fig. 2;

Fig. 5 shows a top view of Fig. 3;

Fig. 6 shows a cross section of a sound-absorbing ceiling fitted with ventilation members; and

Fig. 7 shows a sectional view at the line VII-VII in Fig. 3.

The pictorial sectional view of Fig. 1 illustrates the arrangement of the ventilation member according to the invention between two  
 10 sheets of sound-absorbing material 6 and between panels 10 attached to supporting means. The ventilation member consists of a top component section 12 and a bottom component section 11.

The top section 12 forms a cover plate whose surface is interrupted by air slits 1 in lengthwise direction. Laterally to the air slits 1, the cover plate has holding flanges 7 extending beyond the width of the gap between the two sheets 6 and having bends 13 at the edges. On the under side, laterally to the air slits 1, connection means 4 extend vertically downward, their lower portion being hook shaped with beveled surfaces. The hook shaped beveled surfaces are engageable in matching connection  
 20 means 5, likewise hook shaped bevels, of the bottom section 11, as shown especially in Fig. 2.

The bottom component section 11 has an upward directed more or less U-shaped trough whose walls, erect upon the base surface, constitute the connection means 5 above with their beveled hook shaped surfaces. In the base surface of section 11, air holes 2 are arranged. From the base, two bounding surfaces 3 arranged at a distance apart and in longitudinal direction of the section extend vertically downward, baffling the stream of air through the holes 2. On the outsides of the bounding surfaces 3, holding  
 30 flanges 8 for the boards 6 are attached at right angles. From the holding flanges 8, hook shaped centering segments 9 extend vertically downward, holding the ventilation member centered between two panels 10. For this purpose, the centering segments 9 are hooked towards the center of component section 11.

Fig. 2 illustrates the assembly of the top component section 12 with the bottom component section 11. In assembly, the beveled surfaces of the hooked connection means 4, 5 slide on each other, are elastically deformed, and become hooked together. On the base surface of the U-shaped trough of the bottom section 11 a strip 14 with apertures is slidably arranged, by which means the flow of air through holes 2 can be regulated. The arrangement and function of the strip 14 will be clear from the top view in Fig. 4.

10 Fig. 3 shows a sectional view of the component sections 11 and 12 snapped together as well as the function of the upward bends 13 in the holding flange 7. The bends 13 permit easy insertion of the sheets of sound-absorbing material 6. On the under sides of the bends 13, back hooks 16 are arranged. The hooks 16 increase the pressure on the sound-absorbing sheets 6.

Fig. 5 shows the lengthwise air holes or slits 1 of the top section 12 and the air holes 2 of the bottom section 11, that portion of the base surface of component section 11 in which the air holes are arranged being made thicker than the upper part, so that some vertical flow of air will take place in the air holes themselves. If the depth of the air holes were too  
20 small, an oblique emergence of the air would be possible, for example, and this might result in undesirable turbulence and hence loss of efficiency.

Fig. 6 shows a portion of an acoustic ceiling provided with ventilation members according to the invention and consisting of panels 10 attached to supports, with sheets of sound-absorbing material 6 arranged above them.

Fig. 7 shows, in a sectional view, how the ventilation members meet a supporting rail 15 running transverse to the panels and the members, with flanges having projecting tabs 17 to hold the generally C-shaped panels by the inner edges of their curved margins. In such an arrangement, portions 3 and 9 of the ventilation member are to be locally trimmed or cut  
30 out to enable the members to rest on the flanges of the rail 15. The ventilation means may alternatively be cut off along the dot-dash line VIII in Fig. 7. In that case, the ventilation members will rest only on the margins of the panels. The sheets of sound-absorbing material extend beyond the

supporting rail flange.

In the case of supporting rails without continuous flanges, other known fastening methods may be used.

It is emphasized that the invention is not limited to the embodiment described above and represented in the drawings, and that other possible embodiments are within the scope of the invention.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. Composite ventilation member for use in ceiling coverings, particularly for sound-absorbing ceilings, comprising: a top and a bottom component section, said sections having horizontal ceiling element holding flanges thereon, with mutually engageable connecting means being arranged on said sections, said top section and the bottom section each having air passage openings therein.

2. Ventilation member according to claim 1, wherein the connecting means are arranged on either side of the air passage openings in the form of mutually engageable lock hooks with beveled surfaces.

3. Ventilation member according to claim 1 wherein the air passage openings in the top section are in the form of air slits and those in the bottom section in the form of air holes.

4. Ventilation member according to claim 3, wherein a longitudinally slidable strip provided with apertures is arranged on top of the air holes.

5. Ventilation member according to claim 1 wherein the bottom section has bounding surfaces projecting vertically downward on either side of the air passage openings, on the outsides of which surfaces the horizontal holding flanges are attached.

6. Ventilation member according to any of claims 3, 4 and 5, wherein the portion of the bottom section in the region in which the air holes are arranged is made thicker than the remaining portions of the bottom section.

7. Ventilation member according to any one of claims 1, 2 and 3, wherein hook shaped centering segments are provided which are adapted to engage with panels of a ceiling covering, said hook shaped centering segments extending vertically downward from the holding flange of the bottom section.

8. Ventilation member according to any one of

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claims 1, 2 or 3, wherein the margins of the holding flange of the top component section have bends directed upward.

9. Ventilation member according to any one of claims 1, 2 or 3 wherein the margins of the holding flanges of the top component section have back hooks on their under sides.

10. Ventilation member according to any one of claims 1, 2 and 3, wherein the sections are made of an extrudable material.



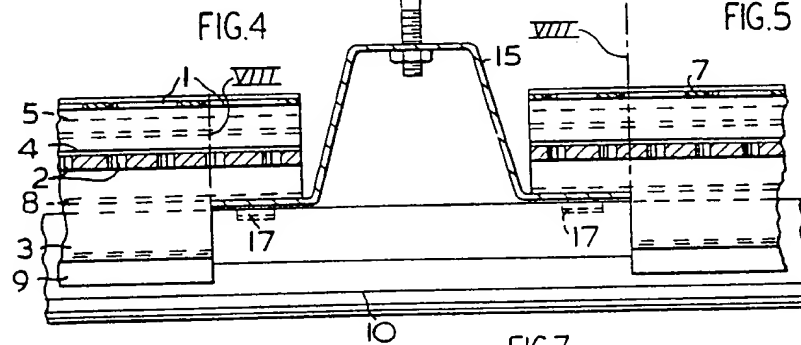
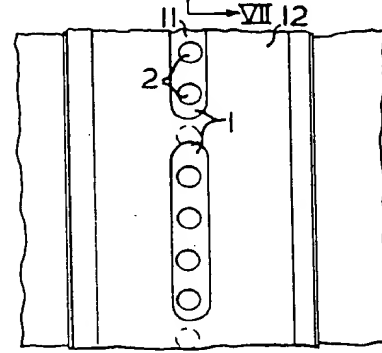
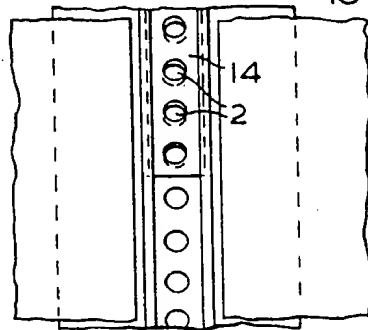
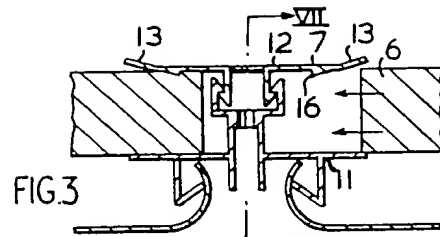
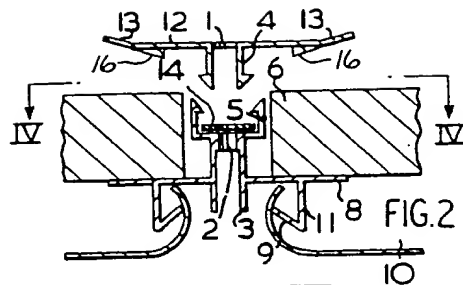


FIG. 7

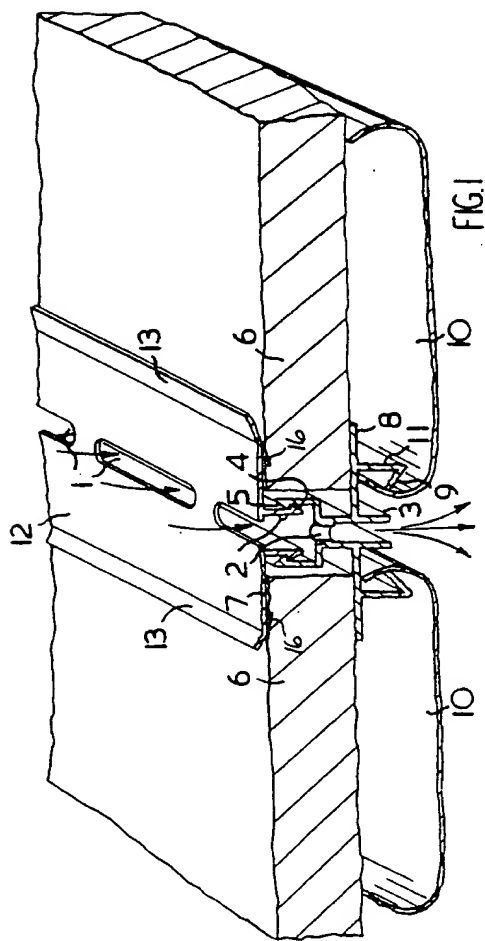


FIG. 1



FIG. 6